That which is claimed is:

1. A composition used in a semiconductor manufacturing process, comprising perhydro-polysilazane having a weight average molecular weight of about 300 to about 3,000 and a polydispersity index of about 1.8 to about 3.0 according to the formula:

$-(SiH_2NH)_n-$

wherein n is a positive integer.

2. The composition of claim 1, further comprising a solvent, wherein the composition comprises about 5 to about 30 percent by weight perhydro-polysilazane, and about 70 to about 95 percent by weight solvent.

3. The composition of claim 2, wherein the solvent comprises xylene or dibutyl ether.

4. A solution comprising the composition of claim 1 and a solvent, wherein the solution comprises about 5 to about 30 percent by weight perhydro-polysilazane, and about 70 to about 95 percent by weight of the solvent.

5. The solution of claim 4, wherein the solvent comprises xylene or dibutyl ether.

6. A method of forming a film in a semiconductor manufacturing process, comprising forming the film on a substrate to cover at least a portion of the substrate

using a solution comprising a solvent and perhydro-polysilazane, wherein the perhydro-polysilazane has a weight average molecular weight of about 300 to about 3,000 and a polydispersity index of about 1.8 to about 3.0 according to the formula:

$$-(SiH_2NH)_n-$$

wherein n is a positive integer.

7. The method of claim 6, wherein the solution comprises about 5 to about 30 percent by weight perhydro-polysilazane, and about 70 to about 95 percent by weight solvent.

8. The method of claim 6, wherein the solvent comprises xylene or dibutyl ether.

9. The method of claim 6, wherein the film is formed by a spin coating process.

10. The method of claim 6, further comprising changing the film into a silicon oxide film by heating the film and by providing an oxidizing gas to the film.

11. The method of claim 10, wherein the film is heated at a temperature of above about 600 °C.

12. The method of claim 10, wherein the oxidizing gas comprises an oxygen gas or a water vapor.

13. A method of manufacturing a semiconductor device, comprising:

forming a plurality of first conductive patterns on a substrate where an active region and a field region are defined;

forming a first film on the substrate to fill gaps between the first conductive patterns using a solution that comprises a solvent and perhydro-polysilazane, wherein the perhydro-polysilazane has a weight average molecular weight of about 300 to about 3,000 and a polydispersity index of about 1.8 to about 3.0 according to the formula:

$$-(SiH_2NH)_n-$$

wherein n is a positive integer;

forming a first silicon oxide film from the first film by heating the first film and providing a first oxidizing gas to the first film;

forming a first opening exposing the active region by partially etching the first silicon oxide film; and

forming a first contact in the first opening by filling the first opening with a conductive material.

14. The method of claim 13, wherein the first oxidizing gas comprises an oxygen gas or a water vapor, and the first film is heated at a temperature of above about 600 °C.

15. The method of claim 13, further comprising prior to forming the first conductive patterns:

forming a trench on the substrate;

forming a second film on the substrate to fill the trench using a solution that comprises a solvent and perhydro-polysilazane having a weight average molecular weight of about 300 to about 3,000 and a polydispersity index of about 1.8 to about 3.0 according to the formula:

$- (SiH_2NH)_n -$

wherein n is a positive integer;

forming a second silicon oxide film from the second film by heating the second film and by providing a second oxidizing gas to the second film; and

forming a trench oxide film in the trench by removing a portion of the second silicon film existing on the substrate.

16. The method of claim 15, wherein the second oxidizing gas comprises an oxygen gas or a water vapor, and the second film is heated at a temperature of above about 600 °C.

17. The method of claim 13, further comprising cleaning the first opening after forming the first opening.

18. The method of claim 13, further comprising:

forming a second conductive pattern making contact with the first contact;

forming a third film on the substrate and second conductive contact using a solution that comprises a solvent and perhydro-polysilazane, wherein the perhydro-polysilazane has a weight average molecular weight of about 300 to about 3,000 and a polydispersity index of about 1.8 to about 3.0 according to the formula:

$- (SiH_2NH)_n -$

wherein n is a positive integer;

forming a third silicon oxide film from the third film by heating the third film and providing an third oxidizing gas to the third film;

forming a second opening exposing a portion of the substrate by partially etching the third silicon oxide film and the first silicon oxide film; and

forming a second contact in the second opening by filling the second opening with a conductive material.

19. The method of claim 18, wherein the third oxidizing gas comprises an oxygen gas or a water vapor, and the third film is heated at a temperature of above about 600 °C.

20. The method of claim 18, further comprising cleaning the second opening after forming the second opening.

21. The method of claim 13, wherein a gap between the first conductive patterns is less than about 20 nm.

22. The method of claim 21, wherein a ratio between the size of the gap and the average molecular size of perhydro-polysilazane is above about 5:1.